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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/471,435	12/23/1999	MICHAEL J. MCTAGUE	INTL-0296-US	7390

7590 08/28/2003

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EXAMINER

TRAN, KHANH C

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 08/28/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/471,435

Applicant(s)

MCTAGUE ET AL.

Examiner

Khanh Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23-30 is/are allowed.
- 6) ☒ Claim(s) 1,3-7,14-17 and 20-22 is/are rejected.
- 7) ☒ Claim(s) 2,8-13,18 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The Reply filed on 05/30/2003 has been entered. Claims 1-30 are pending in this Office action.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 3-6, 14-17, 20-22 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-7, 14-17, 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ribner et al. U.S. Patent 6,028,891.

Regarding claims 1 and 14, Ribner discloses in figure 8 a DMT frequency division multiplexing ADSL modem 12' at a central office (CO) comprises a transmitter section 18' and a receiver section 80', wherein the receiver section 80' includes an analog-to-digital converter (ADC) 84' producing digital samples at a rate of 2560 MHz, a decimator 85, coupled to an ADC 84', producing digital samples at a rate of 256 MHz. However, Ribner does not disclose the foregoing components are implemented on an integrated circuit (IC) and a multiplexer is employed to multiplex the lower data rate and

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control information. As known in the art of integrated circuit technology, it would have been apparent for one of ordinary skill in the art that both the transmitter and the receiver section could be easily implemented on the same IC circuit. Ribner further teaches that the data on line $95_0 - 95_{31}$ is combined by the Q.A.M decoder 94 to produce a properly arranged stream of data on line 90. Hence, from 32 input lines of data, the Q.A.M decoder 94 decodes and combines them into a properly arranged stream of data; therefore, it would have been obvious that the Q.A.M decoder 94 further performs function of a multiplexer to multiplex digital samples and control information.

Regarding claims 3 and 15, the receiver section 80' includes a decimator 85. As recited in claim 1, the sample rate of 2560 MHz at output of the ADC 84' is reduced to the sample rate of 256 MHz when it passes through the decimator 85. Hence, it would have been obvious that the higher data rate of the ADC 84' is reduced to a lower data rate by the decimator 85.

Regarding claim 4, the receiver section 80' further includes an analog low pass filter 82' coupled to the ADC 84' in turn coupled to the decimator 85 in turn coupled to the Q.A.M decoder 94.

Regarding claims 5 and 17, referring to figure 8 again, in the transmitter section 18', the sequence of digital samples on line 13 is encoded by a Q.A.M encoder 24 onto the 256 input lines of the I.F.F.T 26 as a sequence of frames. Obviously, the Q.A.M encoder 2 performs a function of a de-multiplexer to split the input digital samples on line 13 into 256 lines.

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Regarding claims 6 and 20-21, referring to figure 8 again, the transmitter section 18' employs an interpolator 29 for oversampling the transmitter section 18'.

Regarding claim 7, the ADSL modem 12' includes a transmitter section 18' and a receiver section 80'.

Regarding claim 16, as recited in claim 1, Ribner teaches that the data on line 95₀ – 95₃₁ is combined by the Q.A.M decoder 94 to produce a properly arranged stream of data on line 90. Hence, the Q.A.M decoder 94 performs both functions encoding and multiplexing digital samples and control information.

Regarding claim 22, referring to figure 8 again, the transmitter section 18' includes a DAC 30 for converting interpolated data to an analog format signal.

Allowable Subject Matter

4. Claims 2, 8-13 and 18-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claims 23-30 are allowed.

Conclusion

6. The prior art made of record and not relied upon could be considered pertinent to applicant's disclosure:

Mirfakhraei U.S. Patent 6,570,912 B1 discloses "Hybrid Software/Hardware DMT Transceiver".

Laturell U.S. Patent 6,269,103 B1 discloses "High Speed Data Interface using TDM Serial Bus".

Fadavi-Ardekani et al. U.S. Patent 6,263,075 B1 "Interrupt Mechanism using TDM Serial Interface".

Swaminathan U.S. Patent 4,956,871 discloses "Improving Sub-band Coding of Speech at Low Bit Rates by Adding Residual Speech Energy Signals to Sub-Bands".

Lai U.S. Patent 6,594,715 B1 discloses "Method and Apparatus for Interfacing ADSL Lines to CODEC".

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 703-305-2384. The examiner can normally be reached on Tuesday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 703-306-3034. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.


Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3800.

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KCT


MOHAMMAD H. GHAYOUR
PRIMARY EXAMINER